

Wheel Spokes Assembly


A. Insert Rim and Tire.

Step 1. Click File Menu > New, click **Assembly Metric** and OK.

Step 2. Click **Keep Visible**  in the Property Manager, **Fig. 1**.

Step 3. Click **Browse** in the Property Manager, **Fig. 1**.

Step 4. Select your **REAR RIM SPOKES** file and click Open.

Step 5. Click OK  in the Property Manager. This will place Rim origin at the assembly origin and fix position so Rim cannot move.

Step 6. Click **Browse** in the Property Manager, **Fig. 1**.

Step 7. Select your **REAR TIRE** file and click Open.


Step 8. Click approximately where Tire is positioned, **Fig. 2**.
Click OK  in Property Manager.



Fig. 2

B. Save as "REAR WHEEL SPOKES ASSEMBLY".

Step 1. Click File Menu > Save As.

Step 2. Key-in **REAR WHEEL SPOKES ASSEMBLY** for the filename and press ENTER.

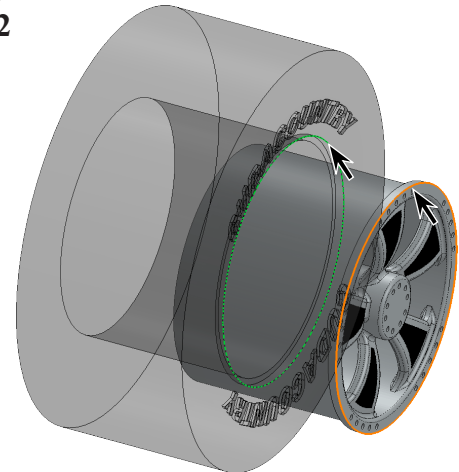
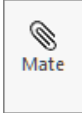


Fig. 3

C. Mate: Tire to Rim.

Step 1. Click **Mate**  on the Assembly toolbar.

Step 2. Click **top outside edge of Tire** and **top outside edge of Rim**, **Fig. 3**.


Step 3. Click Add/Finish Mate  to add **Coincident** mate and OK  in the Property Manager when done.

Step 4. Save. Use Ctrl-S.



Fig. 4

D. Enable Toolbox Browser.

Step 1. If necessary, enable Toolbox Browser, click the flyout of **Options**  on the Standard toolbar and click **Add-Ins**.

Step 2. Check **SOLIDWORKS Toolbox Library** to place a check in the both check boxes, then click OK, **Fig. 5**.

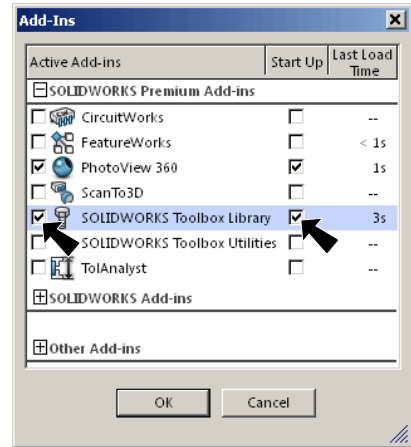






Fig. 5

E. Design Library.

Step 1. Click the **Design Library** tab  in Task Pane, **Fig. 6**.

Step 2. Expand the **Toolbox**  **Toolbox**
 Expand **ANSI Metric** folder  **ANSI Metric**
 Expand **Bolts and Screws** folder  **Bolts and Screws**
 Click **Hex Head** folder  **Hex Head**

Step 3. In the lower pane, **right click Heavy Hex Flange Screw** and click **Create Part** from menu, **Fig. 6**.

Step 4. In the Configure Component Property Manager set:
 under Properties, **Fig. 7**
Size M5
Length 8
 click OK .

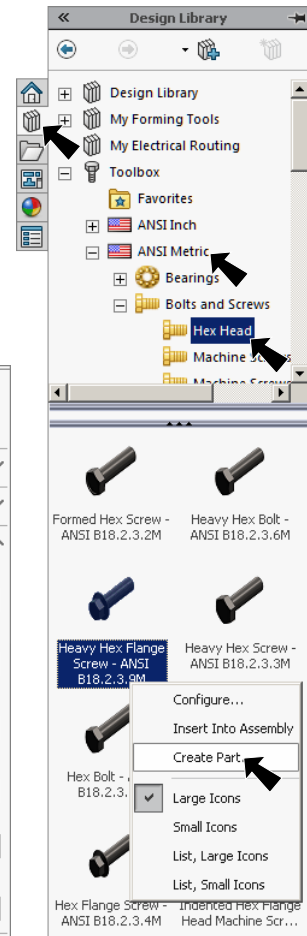


Fig. 6

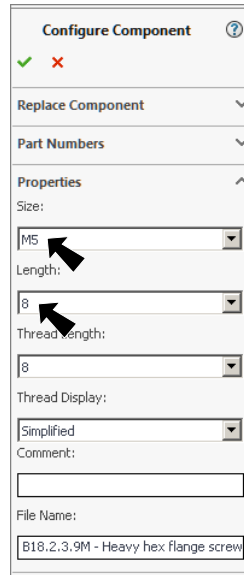


Fig. 7

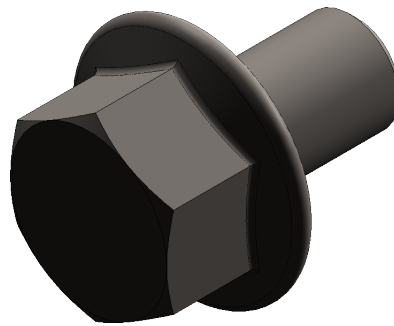


Fig. 8

F. Save As HEX FLANGE 072.

Step 1. If necessary, switch to the Screw part file. Use **Ctrl-Tab**.

Step 2. Click File Menu > Save As.

Step 3. In the Save As dialog box:
 key-in **HEX FLANGE 072** for filename.
 in Save in dialog box, **navigate to My Documents/Tech Ed/Rail Car** folder
 click Save button.

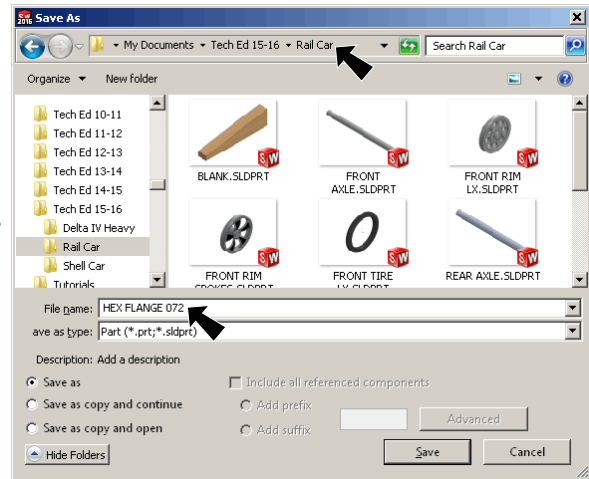


Fig. 9

G. Scale to .072.

Step 1. Click Insert Menu > Features > Scale.

Step 2. In the Scale Property Manager set:
 under Scale Parameters, **Fig. 10**
 check **Uniform scale**
Scale Factor .072
 click OK

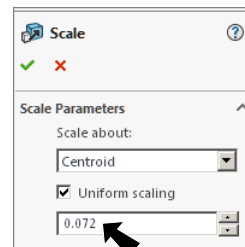


Fig. 10

Step 3. Click **Zoom to Fit** (F) on the View toolbar.

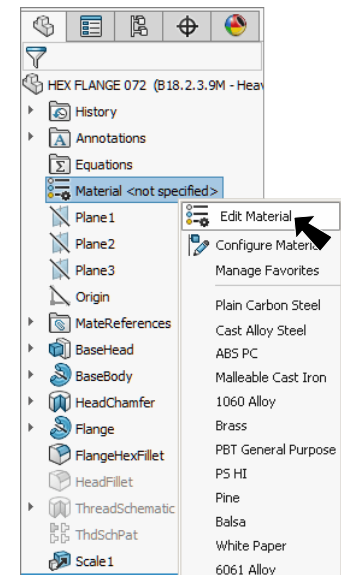


Fig. 11

H. Material Chrome Stainless Steel.

Step 1. **Right click Material** in the Feature Manager and click **Edit Material**, Fig. 11.

Step 2. **Expand Steel** in the material tree and select **Chrome Stainless Steel**. Click **Apply** and **Close**.

Step 3. Save. Use **Ctrl-S**.

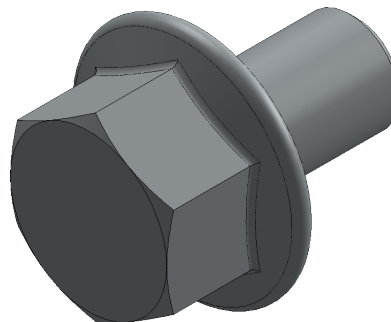


Fig. 12


I. Insert Scaled .072 Screw.

Step 1. Switch back to the Assembly file. Use **Ctrl-Tab**.

Step 2. Use left Arrow key on keyboard twice to rotate view to better view **Hole Wizard** holes in Rim, **Fig. 13**.

Step 3. Click **Insert Components**  on the Assembly toolbar.

Step 4. In the Insert Components Property Manager: under Open documents, click your **HEX FLANGE 072** file.

Move the tip of your cursor to the edge of a hole, **Fig. 13**. When the screw snaps into place and the cursor changes to  concentric and coincident mate, release the screw.

Step 5. Save. Use **Ctrl-S**.

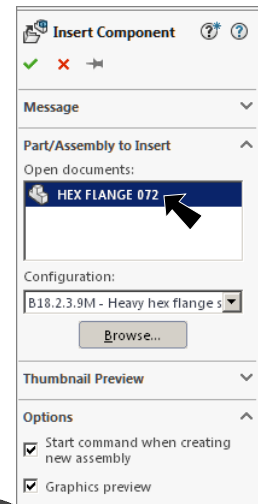


Fig. 14

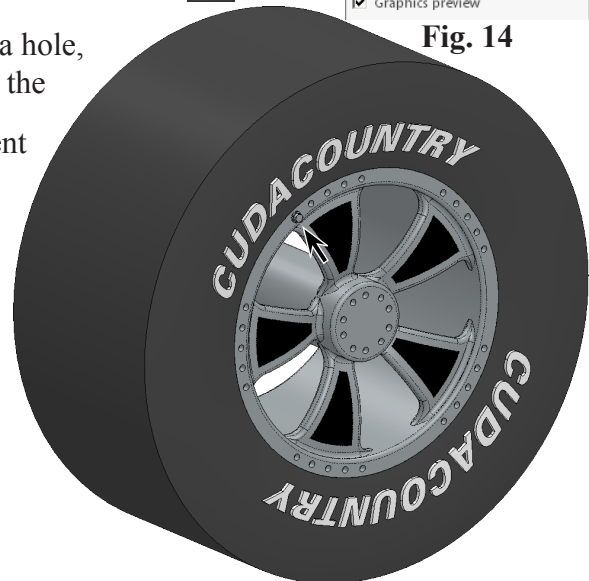


Fig. 13

J. Pattern Driven Components Screw to Hole Wizard.

Step 1. Click Insert Menu > Component Pattern > Pattern Driven.

Step 2. In the Pattern Driven Property Manager set: under Components to Pattern, **Fig. 15** click **Hex Flange Screw** in assembly, **Fig. 16**

under Driving Feature or Component click in the Driving feature box click **Hole Wizard hole** (behind screw) in Rim to select feature, **Fig. 16**.

If necessary, click Select Seed Position button and click hole behind screw to move Seed Position.

Click OK .

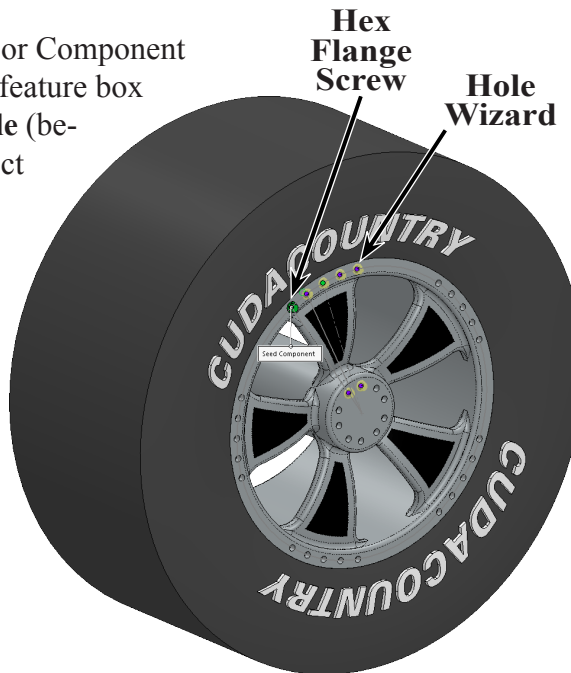


Fig. 16

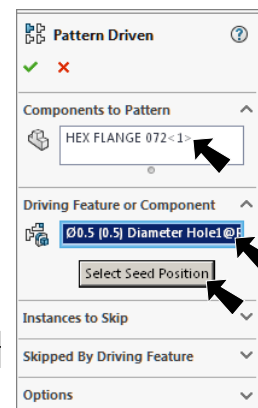


Fig. 15

K. Pattern Driven Components Cir Pattern.

Step 1. Click Insert Menu > Component Pattern > Pattern Driven.

Step 2. In the Pattern Driven Property Manager set:
 under Components to Pattern, **Fig. 17**
 expand the flyout Feature Manager design tree in top left corner of graphics area, **Fig. 18**
 click **DerivedHolePattern1**

under Driving Feature or Component
 click in the Driving feature box
 in the flyout Feature Manager design tree
 and expand Ream Rim Spokes part
 click **CirPattern2** feature,
Fig. 17

If necessary, click Select Seed Position
 and click Hole Wizard feature in graphics area.

click OK ✓.

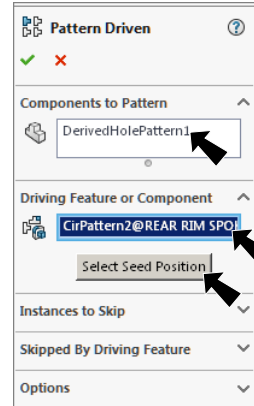


Fig. 17

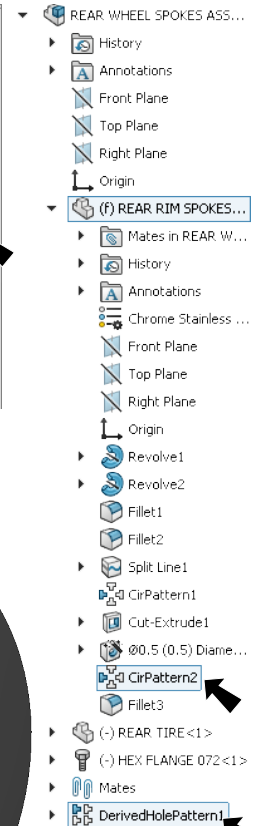


Fig. 18

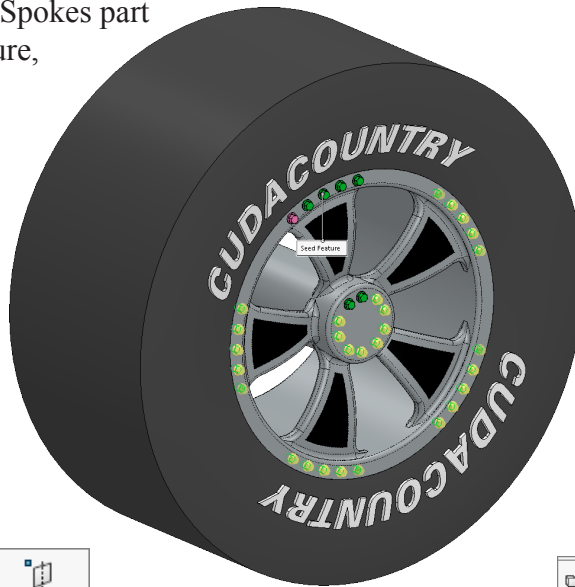


Fig. 19

L. Mate Reference.

Step 1. Click a cylindrical face of Rim to select it, **Fig. 20**.

Step 2. Click **Reference Geometry** on the Assembly toolbar and **Mate Reference** from the menu.

Step 3. In the Mate Reference Property Manager click OK ✓, **Fig. 21**.

Step 4. Save. Use **Ctrl-S**.

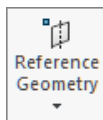


Fig. 20

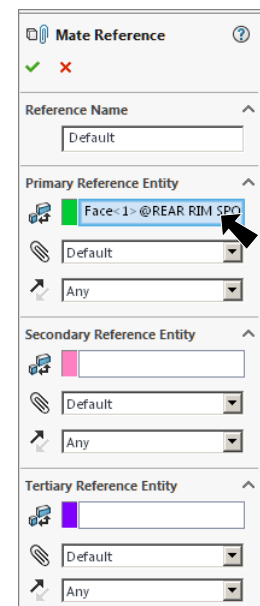


Fig. 21